

What is claimed is:

1. A bearing apparatus for supporting a pinion shaft, comprising: a pair of rolling bearings which rotatably support a pinion shaft to a case and are arranged side by side in a shaft direction between a pinion gear arranged at one end of said pinion shaft and a companion flange attached outside the other end thereof,

wherein the rolling bearing on the companion flange side comprises an angular ball bearing comprising an inner ring fixed to said pinion shaft, an outer ring fixed to said case, and a set of balls interposed between these inner and outer rings, and

wherein a relationship between a radius of curvature R_i of an inner ring raceway, a radius of curvature R_o of an outer ring raceway, and a ball diameter B_d of the rolling bearing on the companion flange side satisfies

$R_i < R_o$

$0.502 \times B_d \leq R_i \leq 0.512 \times B_d$, and

$0.510 \times B_d \leq R_o \leq 0.520 \times B_d$.

2. The bearing apparatus for supporting the pinion shaft according to claim 1, wherein a contact angle θ between the ball and the inner and outer ring raceways in the rolling bearing on the companion flange side satisfies $30^\circ \leq \theta \leq 45^\circ$.

3. The bearing apparatus for supporting the pinion shaft according to claim 1, wherein the rolling bearing on the companion flange side includes an angular contact ball bearing with single raceway or a tandem type angular contact ball bearing with double raceway.

4. The bearing apparatus for supporting the pinion shaft according to claim 3, wherein the rolling bearing on a pinion shaft side includes a circular cone rolling bearing with single raceway.

5. The bearing apparatus for supporting the pinion shaft according to claim 3, wherein the rolling bearing on the pinion shaft side includes the tandem type angular contact ball bearing with double raceway.

6. The bearing apparatus for supporting the pinion shaft according to claim 3, wherein the rolling bearings on the pinion shaft side includes a combination of two angular contact ball bearings with single raceway.

5 7. A bearing unit for supporting a pinion shaft to a differential retaining shield, comprising:

a rolling bearing comprising an angular contact ball bearing with single raceway on a companion flange side; and

10 a rolling bearing comprising a tandem type angular contact ball bearing with double raceway on a pinion gear side,

wherein both of the rolling bearings commonly comprise an outer ring as a single outer ring and

15 wherein a relationship between a radius of curvature R_i of an inner ring raceway, a radius of curvature R_o of an outer ring raceway, and a ball diameter B_d of the rolling bearing on the companion flange side satisfies

$$R_i < R_o$$

$$0.502 \times B_d \leq R_i \leq 0.512 \times B_d, \text{ and}$$

$$0.510 \times B_d \leq R_o \leq 0.520 \times B_d.$$

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